

and gave professionals and the community a one-year grace period to comply. According to the building official, the added costs have proven to be minimal, as projected by NEHRP reports. The building department has had numerous seminars to train engineers, architects, and contractors about the seismic regulations. With the 1994 Standard Building Code, Memphis was brought up to a seismic zone 3 designation.

Implementation of seismic design has been a slow process, involving the training of builders, design professionals, and department staff. In some ways the community still is resistant to seismic design, which makes it difficult for the city/county to be able to expend resources for training. But much progress has been made over the past few years, and seismic design is becoming more widely accepted.

### **Plan Review Process**

The first step in the process for obtaining a residential building permit is to present an application, two copies of the site plan, and one copy of the floor plan to the clerk specialist A. This clerk calculates the permit fee (based on square footage), verifies the proper zoning, enters the information onto the computer, and then refers the application and plans to the plan reviewer. The plan reviewer checks for proper zoning, legality of the lot, setback requirements, building code requirements, and subdivision requirements. The plan reviewer then approves or rejects the permit application. With approval by the plan reviewer, the clerk issues the permit and routes the applicant to the cashier.

An application for a permit for a commercial building is required to be accompanied by four complete sets of plans; one set of specifications signed, sealed, dated, and drawn to scale by an architect or engineer who is licensed by the state

of Tennessee; and a plans review fee. The application is entered by the clerk specialist A. The plans are given to the clerk specialist B, who routes the plans to the Building Plans Review Section, building inspector, city or county fire department, Plumbing Section, Mechanical Safety Section, city traffic engineer, and public works or the county engineer. A copy of each review is returned to the clerk specialist B. The clerk copies the reviews of each section, and the total review is mailed to all parties listed on the application (i.e., owner, architect, and contractor). It normally takes one to three weeks to receive a permit, depending on the size of the job. The staff levels in Memphis/Shelby County are usually adequate for the workload. The load varies, however, and it is not always possible to plan ahead.

If someone wishes to appeal a building code decision or has other requests, he or she may contact the building official. Problems are usually settled without requiring a formal meeting of the board of appeals, although that mechanism is available if needed.

### **Code Enforcement and Inspection**

Memphis/Shelby County seeks Standard Building Code (SBC) certification in plan reviewers and building inspectors, but it is not mandatory. The building inspector, however, must be certified. The city cannot afford licensed engineers as plan reviewers, though it would be desirable.

The Office of Construction and Code Enforcement has a monthly volume of 4,170 inspections. The building inspection process is initiated by a call from the contractor or owner. Memphis conducts reinspections on every job (foundation, slab, final, etc.) every month to check on progress. The inspections are covered by the application fee. Permits and inspections are programmed on a mainframe computer, which gener-

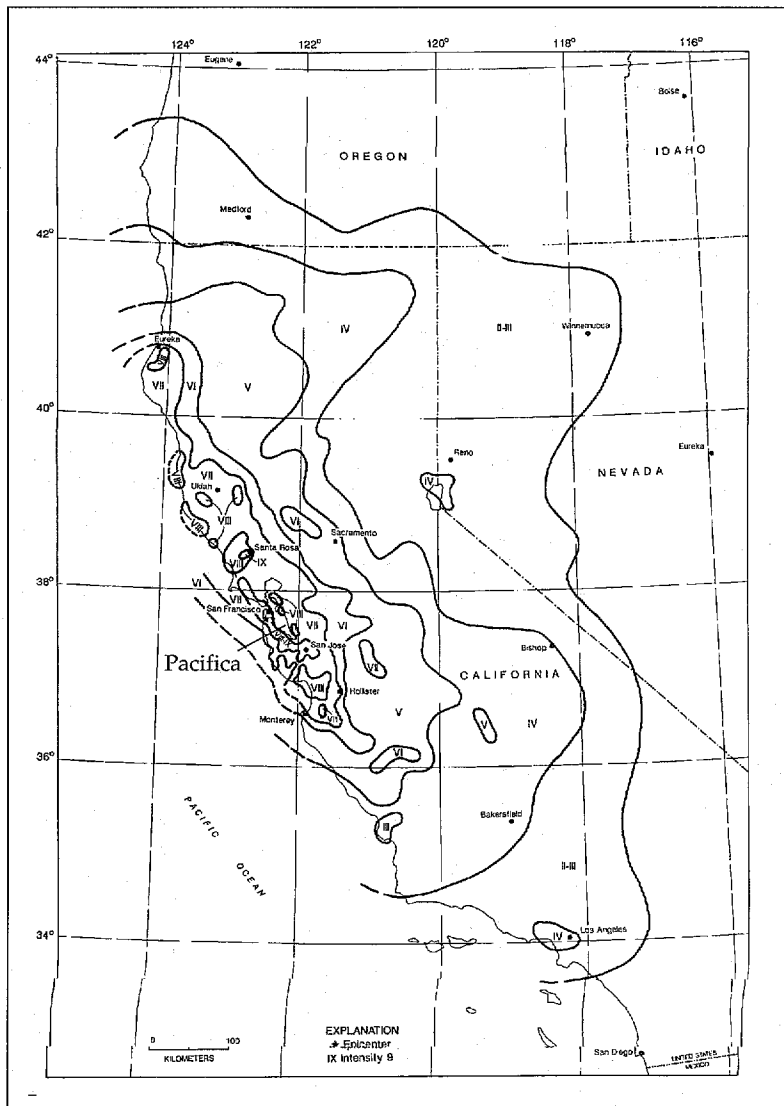


FIGURE C.5 The City of Pacifica, California, is located close to the San Andreas Fault, in an area that was severely shaken by the great San Francisco Earthquake of 1906. (Source: U.S. Geological Survey Professional Paper 1527, 1992)

ates monthly management reports regarding permits, inspections, and fees.

Memphis/Shelby County seeks to work with applicants by scheduling predesign conferences and offering other services. No new procedures are enforced without advance notice to practitioners.

If noncompliance or postponement of construction occurs, the department has standard actions it may take. The first step is to issue a courtesy citation, which cites the specific code violations and date of abatement. It requires abatement within thirty days or else a summons to court will be administered. Generally this achieves compliance.

The building official says that the news media have been very helpful in getting accurate information out to the public. The building department has developed a working relationship with the media, which has helped to reduce the potential for negative publicity. The department has worked at developing a professional, open process and cooperative relations with the public and the building community. These aspects are very important in this potentially contentious field.

### **Pacifica, California (ICBO, Small)**

Pacifica has one plan reviewer and two building inspectors for a population of 40,000. The Building Department's annual budget is approximately \$300,000. Staff levels are adequate for the work load, although the summer construction season can get quite busy.

#### **Seismic Code Requirements**

Seismic provisions have been part of the code since Pacifica's incorporation in 1956. Seismic design and enforcement are among the highest priorities facing the building department, because Pacifica is located in seismic zone 4 and is quite close to numerous active faults.

California has had seismic provisions since the 1933 Long Beach earthquake. Currently, the state uses the UBC and has refined the code over the years to reflect practices and experiences in California.

#### **Plan Review Process**

The process of seismic enforcement starts with plan review. To receive a building permit one first must submit plans and documents to the planning, engineering, and building departments. The planning department checks for compliance with zoning ordinance regulations. The engineering department reviews for

off-site issues, such as setbacks and sidewalks. The building department handles reviews of plumbing, electrical, structural, and mechanical elements. Once all approvals are received, the building official signs the building permit. The average time to receive permit approval is three weeks.

If an applicant wishes to appeal a decision, she or he first talks with the building official. There is a board of appeals, but its power is limited. The building official has the final word on code compliance.

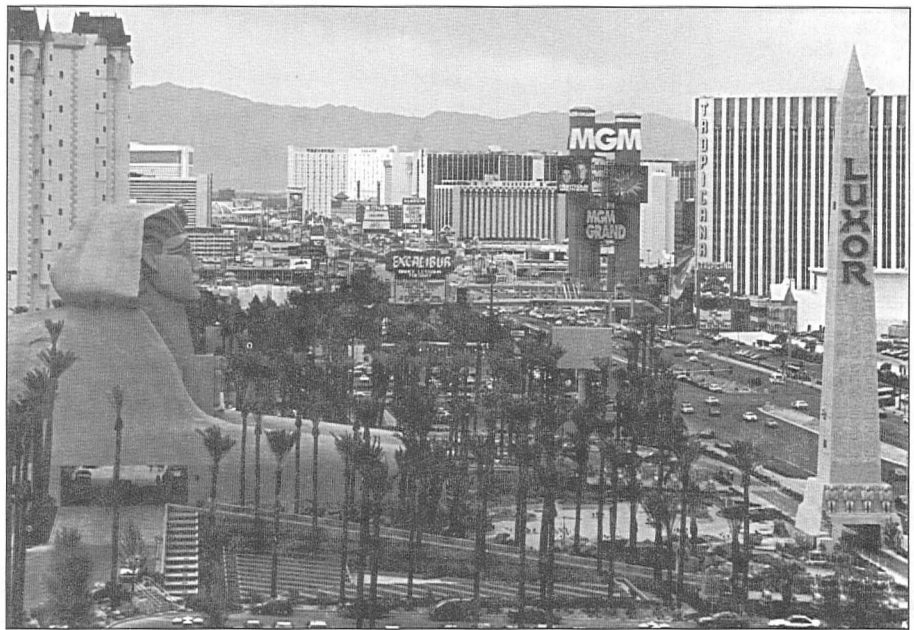
### **Code Enforcement and Inspection**

When the building permit is issued, applicants are given a job card that details the inspection process and schedule. The owner must schedule at least twenty-four hours ahead of when they wish to be inspected. Building inspectors occasionally conduct unannounced visits on large projects.

During construction there are specific inspections for seismic compliance, such as the nailing schedule and hold-down systems. Staff training concentrates on ensuring that the building official, reviewers, and inspectors are knowledgeable about seismic provisions. Field staff also work at educating contractors on the purposes behind the code provisions.

The initial permit fees cover inspections, except for reinspections: the third visit on the same issue requires an additional fee. Stop work orders are administered when someone is working without a permit, and these can result in a charge of ten times the initial permit fee. Some lenience is given to homeowners, who may be unaware of the permit requirements.

The only formal training requirement for plan reviewers and inspectors is certification from ICBO. Staff reviewers are also recommended to have engineering training.



### **Fee Schedule**

The building official sets the permit fees using the *Uniform Building Code's* (UBC) Chapter 3 fee schedule. The Uniform Administrative Code sets the fees for plumbing, electrical, and mechanical permits. The engineering reviewers set their own fees based on an hourly rate.

### **Clark County, Nevada (ICBO, Large)**

The Clark County Department of Building regulates construction in the unincorporated areas of the county, a jurisdiction with a population of 417,000. It includes many areas adjacent to Las Vegas, including the huge hotels on the Las Vegas Strip. Clark County is one of the most active construction areas in the country, with growth continuing at about five percent per year.

Including direct supervisors, the county has seventy-nine building inspectors and fourteen plan reviewers, several of whom are engineers and architects. The department's approximate annual budget is \$10,000,000, including a \$500,000 plan review contract to supplement staff. The department consists of the Plan Check Division, Inspection

FIGURE C.6 Large parts of Las Vegas fall under the jurisdiction of the Clark County Department of Building. (Photo: Las Vegas Convention and Visitors Authority)

Division, and Permit Application Center.

### **Seismic Code Requirements**

The county adopted the ICBO *Uniform Building Code* approximately forty years ago and has always used its seismic provisions. Clark County is in seismic zone 2 and integrates seismic and structural reviews. Seismic provisions and dynamic loads, such as wind and snow, are evaluated in the structural analysis. Staff members are familiar with seismic enforcement through plan review and inspection. The department also is involved with state and national seismic committees.

Nevada has adopted the 1991 UBC as the statewide code. They allow local amendments to be more restrictive than the state code, but not less restrictive. Most localities used some version of the UBC before the state adopted the UBC.

### **Plan Review Process**

The process for receiving a building permit is as follows. First an application must detail the scope and type of construction activity, identify the principal design professional for the project, and include site plans. The Department of Building manages the review and distributes copies to each department, such as planning, fire, and public works, to make sure it meets county code requirements.

Plan reviewers are continually trained so as to remain abreast of current building code and enforcement policies. Checklists, supervisor critiques, and inspection classes are a few of the ways reviewers are audited.

The amount of time it takes to get a permit approved varies by the size of the project. Single-family dwellings take approximately three weeks from the time the application is submitted to the final permit approval. Commercial projects can take about four to six weeks. The

numerous large hotels of Las Vegas take much longer to obtain a permit.

Plan reviewers have permission as part of their assignment to sign all permits, after which their supervisors critique. The director gets involved when problems arise or when there is a need for complex interpretations.

Problems or complaints regarding permit denial are first handled administratively. One of the two designated plan check supervisors first tries to resolve the problem. If unresolved, it goes to the director of the Department of Building, who serves as the building official. Finally, the applicant may file a complaint with the board of appeals, which is appointed by the county commissioners to make interpretations of the code and grant appeals.

### **Code Enforcement and Inspection**

Inspections are scheduled as required by the Department of Building and the code to check on different phases of construction, such as foundation, slab, framing, roofing, sheathing, and so on. The inspections are arranged after the builder contacts the department to notify it of the readiness of the construction. Inspections must be conducted before further construction can continue. Certain projects require continual or special inspection. If required, the owner of the site/project must hire an outside inspector or testing agency that has been pre-approved by the Department of Building. This organization conducts all required inspections and deals with structural requirements such as concrete, steel, masonry, soils, and grading issues. The owner of the site/project pays directly for third-party inspection services.

The Department of Building will sometimes conduct unscheduled inspection visits, most commonly for large projects that require such attention. Inspection costs by the

department are covered by the permit fee.

Although the department's workload has increased substantially, the department has incorporated methods for adjusting to these heavy loads, such as hiring more plan checkers and using third-party inspectors. The approved third-party inspector agencies total about fifty firms with about 350 certified inspectors.

### **Fee Schedule**

Clark County's permit fee schedule is slightly less than ICBO's guide. The fee schedule is based on the value of project construction. The plan review fee is 65 percent of the building permit fee derived from the chart. Fast-track projects or projects requiring phased design and construction are charged a higher cost for plan review. Subsequent review of resubmitted plans requires an additional fee. The building permit fee is charged upon issuance of the permit. The fees are only used to fund the services for which they are charged. The funds are placed in an enterprise fund and do not go into the county's general account.

Noncompliance or postponement of construction require additional costs. The Department of Building does not usually charge for additional reinspection on the same issue until the third visit. This charge is \$45. If a "red tag" or stop order is issued, an investigation is conducted and the owner is charged a fee ranging from \$120 to \$2,000. The charge is based on the cost of work at completion of the investigation. The department also can cite a project as a misdemeanor. Finally, the department can file a complaint with the contractors board if a contractor has abused his or her position.

## **INTERVIEWS**

### **Carbondale, Illinois:**

Steve Larson, City of Carbondale (Spring 1994)

### **St. Louis County, Missouri:**

Dave Casl, Building Permit Division, Department of Public Works, Clayton (Spring, 1994)

### **Jonesboro, Arkansas:**

Joe D. Tomlinson, Department of Planning and Inspection (Spring 1994)

### **Memphis, Tennessee:**

Terry Hughes, Building Official, Memphis and Shelby County Construction Code Enforcement (October 16, 1991; Spring 1994); William Walmsley, Director of Engineering, Department of Commerce and Insurance, Division of Fire Prevention, Nashville (May 7, 1991)

### **Pacifica, California:**

Steve Branvold, Plans Examiner and Building Official (Spring 1994)

### **Clark County, Nevada:**

Robert Weber, Director, Department of Building (Spring 1994)

## Survey Instrument

The following pages reproduce a form used by the Illinois Emergency Management Agency to survey communities' building code practices in southern Illinois. Such an inventory is an essential first step toward targeting municipalities or regions for code adoption or improving code enforcement. The data can also be used to help encourage the state to adopt a statewide code.

The Illinois survey, which was accomplished by a graduate student assistant over the course of one summer, began with the identification of 300 municipalities and counties in the area of highest seismic hazard. Using the Illinois Municipal League directory, a master list was created of the addresses, contact phone numbers, and populations of all relevant jurisdictions. Most of the surveys were completed by telephone. Counties were surveyed first, so that they could also confirm the list of cities, towns, villages, and townships within the county. This ensured that all jurisdictions were adequately identified. Where available, the building inspector was surveyed. In jurisdictions without building codes, the mayor or city clerk was surveyed. In small communities, where no telephone response was received after several tries, the surveys were mailed out, using systematic survey procedures. The data were analyzed using spreadsheet software.

The survey concluded that 78 percent of the municipalities have not adopted building codes. Fortunately, most of the larger municipalities, where most of the new construction is occurring, are covered by codes. Still, municipalities encompassing 31 percent of the population of southern Illinois are

not protected by building codes. Of the communities that have codes, most have adopted the most recent version; but some have not; and several communities have a code but no building department to enforce it.

By use of the spreadsheet database, the data could be sorted by various characteristics, providing the Emergency Management Agency with an easy way of identifying communities with adoption or enforcement deficiencies. The data were sorted in nine different ways: (a) addresses of all communities, (b) municipalities without building codes, (c) municipalities with building codes, (d) code updating methods of municipalities, (e) building permit use in municipalities with codes, (f) municipalities with codes but no building departments, (g) types of construction regulated by municipal building departments, (h) building departments' plan review standards, and (i) building department staff composition.

Copies of the full report, *Seismicity and Building Code Use in Southern Illinois*, by Lisa C. Morrison, October 1995, may be obtained for the cost of copying by contacting the Department of Urban and Regional Planning, University of Illinois at Urbana-Champaign, (217) 333-3890.

## **Southern Illinois Building Code Survey: Survey Form**

### *Opening:*

My name is \_\_\_\_\_. I am conducting a survey on building codes in Southern Illinois for the Illinois Emergency Management Agency.

- a. Could you direct me to someone with information about \_\_\_\_\_ (jurisdiction's) building codes?
- b. Can I take a few moments of your time to ask you about building codes in \_\_\_\_\_ (the jurisdiction)?

### *The Survey:*

1. Jurisdiction: \_\_\_\_\_
2. Has \_\_\_\_\_ (jurisdiction) adopted any building codes?  
(If yes, continue. If no, go to 3.)
  - a. What is the name of the building code in use? \_\_\_\_\_
  - b. What was the year of the last revision? \_\_\_\_\_
  - c. How are the building codes updated? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  - d. Is a building permit required prior to construction? \_\_\_\_\_  
\_\_\_\_\_
  - e. If yes, is a licensed architect or engineer's seal required on an applicant's construction document to obtain a building permit? \_\_\_\_\_  
\_\_\_\_\_
3.
  - a. Does \_\_\_\_\_ (jurisdiction) have a code enforcement authority or building department to regulate building codes?  
(If yes, continue. If no, go to end.)
  - b. What is the department name? \_\_\_\_\_  
What is the department address? \_\_\_\_\_  
\_\_\_\_\_

What is the telephone number? \_\_\_\_\_

- c. What types of construction does the department regulate (residential, commercial, etc.)? \_\_\_\_\_

- d. Is a plan review by the building department required for obtaining a building permit? \_\_\_\_\_

If yes, who performs the review? \_\_\_\_\_

If yes, does the reviewer have any of the following?

BOCA Certification \_\_\_\_\_

ICBO Certification \_\_\_\_\_

Professional Engineer's License \_\_\_\_\_

SBCCI Certification \_\_\_\_\_

Professional Architect's License \_\_\_\_\_

Other Certification \_\_\_\_\_

- e. During construction, who ensures compliance with the building code? \_\_\_\_\_

- f. How many staff members are employed by the building department? \_\_\_\_\_

- g. How many of the following does the building department have?

Architects \_\_\_\_\_

Certified Planners \_\_\_\_\_

Engineers \_\_\_\_\_

Field Inspectors \_\_\_\_\_

4. (If no to 2 and 3) Is new construction regulated in any way? \_\_\_\_\_

5. a. Could I have your name? \_\_\_\_\_

- b. Title? \_\_\_\_\_

- c. Mailing Address? \_\_\_\_\_

- d. Phone Number? \_\_\_\_\_

*Closing:*

*That completes our survey. Thank you for your time.*